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10/532270 PCT US

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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25. Feb. 2005

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

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date of mailing
(day/month/year)

18.02.2005

Applicant's or agent's file reference
G5435 PCT

IMPORTANT NOTIFICATION

International application No.
PCT/EP 03/11738

International filing date (day/month/year)
23.10.2003

Priority date (day/month/year)
25.10.2002

Applicant
UMICORE AG & CO. KG

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



European Patent Office - P.B. 5818 Patentlaan 2
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INTERNATIONAL COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference G5435 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/11738	International filing date (day/month/year) 23.10.2003	Priority date (day/month/year) 25.10.2002
International Patent Classification (IPC) or both national classification and IPC C03B5/225		
Applicant UMICORE AG & CO. KG		



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 11.02.2004	Date of completion of this report 18.02.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Creux, S Telephone No. +31 70 340-3027 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/1738**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-10 as originally filed

Claims, Numbers

1-8 received on 31.01.2005 with letter of 31.01.2005

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☒ the claims, Nos.: 9-12
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	-
Inventive step (IS)	Yes: Claims	-
	No: Claims	1-8
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	-

2. Citations and explanations

see separate sheet

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Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The following documents are referred to in this communication :

D1 : Patent Abstracts of Japan vol. 2000, n°08 and JP-A-2000128548

D2 : US-A-2002/0046586

1. Amended **claims 1-8** comply with the requirements of Article 34(2)(b) PCT.
2. Claims 1-6 do not meet the requirements of Article 33(1), (3) PCT in respect of inventive activity, the reasons being as follows :
 - 2.1. Document D1, which is considered as the closest prior art, discloses a platinum refining chamber and a process for refining glass in this chamber, from which amended **claims 1 and 6** differ in that :
 - a) for claims 1 and 6, the chamber cross section is, in at least one segment, shaped in the form of an ellipse or an oval,
 - b) for claim 6, the level of glass is adjusted in such a way that the surface of the glass perpendicular to the direction of flow of the molten glass has a width which is more than twice as great as the maximum vertical extent of the molten glass in the refining chamber.
 - 2.2. Feature a) reduces the dead spaces and therefore solves the problem of improving the glass flow profile. However this solution cannot be regarded as inventive as it is one of the obvious possibilities among which the skilled person would choose according to circumstances in order to solve the problem posed.
Hence the subject-matter of **claim 1** does not involve an inventive step.
Feature b) improves refining efficiency. D1 solves the same problem. Although D1 does not disclose any specific width to depth ratio of the glass, only of the refining chamber, it is customary to fill a refining chamber up to at least one half of its height, in which case the width to depth ratio of the glass in the process of D1 would be roughly between 2

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EXAMINATION REPORT - SEPARATE SHEET**

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and 40. Hence feature b) is considered to be obvious.

The combination of features a) and b) does not provide any further effect over the sum of the individual effects from each feature. The skilled person would include features a) and b) into the process of D1 according to circumstances in order to solve the above-mentioned problem. Hence the subject-matter of **claim 6** does not involve an inventive step.

3. Dependent claims 2-5 do not meet the requirements of the PCT in respect of inventive step (Article 33(1), (3) PCT), the reasons being as follows:
 - 3.1. Concerning **claim 2**, it is well-known to the skilled person that the optimization of the wall thickness is a compromise between the mechanical stiffness on one hand, and the weight and cost of the material on the other hand. Furthermore the addition to thin-walled platinum tubular vessels of stiffening measures like those of claim 2 is also well-known in the art (see also eg. document D2, paragraph [0006] as an illustrative example). The combination of the two known features, as it solves the same well-known problem of stiffening the platinum structure without increasing too much the weight and cost, does not involve an inventive step.
 - 3.2. The preferred ranges of **claims 3 and 4** fall within the range of document D1. These ranges cannot be regarded as a selective invention as they do not provide any further effect over what can be expected from the range disclosed in document D1.
 - 3.3. Among platinum group metal materials, ODS materials are well-known and used and obviously suitable for making a refining chamber. Hence the subject-matter of **claim 5** does not involve an inventive step.
4. **Claim 7** does not meet the requirements of Article 33(1), (3) PCT in respect of inventive activity, the reasons being as follows :

D2, which is considered as the closest prior art, discloses a method for making a platinum tubular part for refining (see claim 1 and § [0004]), from which claim 6 differs in that at least one segment of the refining chamber has an oval or elliptic cross section. However the process of D1 obviously applies to any tubular shapes, including oval or elliptic ones, when a mould with the suitable shape is provided. Hence the skilled person

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would use the method of D1 to make a refining chamber with an elliptic or oval cross section.

5. The subject-matter of **claim 8** does not involve an inventive activity because the products and processes of claims 1-6 lack inventive activity and their use for refining glass is known from D1.
6. **Claims 1-8** meet the requirements of Article 33(4) PCT because the products and processes are applicable to the production of eg optical glasses.

01-2005/11738
vicore AG & Co. KG
Ref.: G 5435 PCT

31. Jan. 2005

VOSSIUS & EP0311738
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New Claims:

1. A refining chamber made essentially of platinum group metal material for glass production, comprising: a chamber in the shape of a tube having a cross section, wherein the cross section of the refining chamber is, in at least one segment, shaped in the form of an ellipse or an oval so that in the operating position the length of a horizontal line that divides the surface of the cross section into a lower and an upper section of the surface, both of which have essentially the same area, is greater than twice the maximum vertical extent of the lower segment of the surface.
2. The refining chamber according to claim 1, wherein the refining chamber has a wall thickness of approximately 0.5 mm to 3 mm, preferably 0.7 mm to 1.5 mm, and is stiffened by shaping measures, said shaping measures comprising forming of creases, corners, waves, folds, or combinations thereof, at the circumference of the refining chamber.
3. The refining chamber according to any one of the preceding claims, wherein the ratio of the length of the horizontal line to the maximum vertical extent of the lower segment of the surface is between 2.5:1 and 5:1.
4. The chamber according to any one of the preceding claims, wherein the ratio of the length of the horizontal line to the maximum vertical extent of the lower section is between 3:1 and 4:1.
5. The refining chamber according to any one of the preceding claims, wherein the refining chamber is essentially manufactured from an ODS material and preferably a FKS 16 Pt alloy.

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6. A process for refining glass in which the molten glass flows through a tubular refining chamber, particularly according to any one of the preceding claims, comprising:
allowing glass in the molten state at a temperature of 1000 °C to 1700 °C to flow through the refining chamber, wherein the cross section of the refining chamber is, in at least one segment, shaped in the form of an ellipse or an oval so that in the operating position the length of a horizontal line that divides the surface of the cross section into a lower and an upper section of the surface, both of which have essentially the same area, is greater than twice the maximum vertical extent of the lower segment of the surface and the level of the molten glass is adjusted in such a way that the surface of the glass perpendicular to the direction of flow of the molten glass has a width which is more than twice as great as the maximum vertical extent of the molten glass in the refining chamber.
7. A process for producing a refining chamber according to any one of the preceding claims 1 to 4, comprising:
inserting a smooth-walled tubular segment into a cylindrical mold having an inside diameter essentially the same as the outside diameter of the tubular segment, and which has radial corrugation-like depressions, closing the two axial ends with a compression tool, filling the space thus formed completely with a hydraulic liquid, and then, by exerting an axial compression through the compression tools, generating an internal hydraulic pressure so that the walls of the tubular segment are corrugated to match the depressions in the mold with simultaneous shortening of the tubular segment.
8. Use of a refining chamber and/or a process according to any one of respective preceding claims for refining glass.

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